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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,690	03/03/2004	Mark Verrall	MERCK-1972 D2	2308

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EXAMINER	
BERMAN, SUSAN W	
ART UNIT	**PAPER NUMBER**
1711	

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/790,690	VERRALL ET AL.	
	Examiner	Art Unit	
	Susan W Berman	1711	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-19 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-19 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 03 March 2004 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/04,12/04.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is not clear what groups are encompassed by the phrase "mesogenicity supporting group" used to define "MG" in formula I. The examiner has not found any disclosure of any specific 'mesogenicity supporting groups" in the disclosure. How is the 'mesogenicity supporting group" different from the mesogenic group?

With respect to claim 11, The mesogenic or mesogenicity supporting group of formula II is not a "compound" as set forth in line 2 of the claim. Formula II represents a "group" in a compound of formula I set forth in claim 1. The definitions of A^1, A^2, and A^3 in the claim are not clear because of the numerous commas employed as punctuation. In lines 5-10 it is not clear what is intended by the phrase "1,4-phenylene where one or more CH groups optionally replaced by N, cyclohhexylene, optionally, one or two non-adjacent CH_2 groups....may be substituted by F or Cl". For instance, is a CH group replaced by N or by N,1,4-cyclohexylene or by 1,4-cyclohexylene or by any one of these? Are 1,4-cyclohexylene and naphthalene-2,6-diyl A^1, A^2, or A^3 in the formula or are they substituents of 1,4-phenylene and each of the A^1, A^2, or A^3 in the formula a 1,4-phenylene group?

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1-9, 11-13, and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Broer et al (4,892,392). Broer et al disclose polymerizable compounds containing mesogenic groups having one or two polymerizable groups (see compounds 1-13 and column 3, lines 10-36). Compounds with a polar terminal cyano group are included. Less than 10 wt % of photoinitiator is added, which encompasses the range of 0.01 to 5% photoinitiator disclosed by applicant, and leaves the remainder of the composition in a weight range greater than 90%.

Claims 1-5 and 11-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Broer et al (5,506,704). Broer et al disclose polymerizable compounds containing mesogenic groups having one or two polymerizable groups (see Figures 2a and 2b). The polymerizable groups can be (meth)acrylate, epoxy, vinyl ether or thiolene (column 5, lines 33-42). Compound with a polar terminal cyano group are included. Mixtures of monofunctional monomers and multifunctional monomers are disclosed. Less than

10 wt % of photoinitiator is added, which encompasses the range of 0.01 to 5% photoinitiator disclosed by applicant, and leaves the remainder of the composition in a weight range greater than 90%.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Hikmet (5,762,823). Hikmet discloses polymerizable mesogenic compounds having one or two polymerizable groups, a spacer group, a linking group or single bond and a mesogenic group and corresponding to the formula I compounds set forth in claim 1 (see figure 2 and column 3, lines 5-11). Compounds having a polar terminal group, CN, are taught. With respect to claim 10, Hikmet teaches compositions comprising a1) < or 30 wt % of mesogen having one polymerizable group and a liquid crystalline group and a2) < or 2 wt. % of mesogen having two polymerizable groups and a liquid crystalline group and 1% of an initiator (column 1, line 59, to column 2, line 2, and column 5, lines 1-20). The monoreactive mesogenic compounds disclosed have a polar terminal group of CN.

Claims 1, 3-9 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Hasabe et al (5,863,457). Hasabe et al disclose polymerizable mesogenic compounds having one polymerizable group linked directly to a mesogenic group and corresponding to the formula I compounds set forth in claim 1 wherein n=0 (column 6, lines 1-65). Monoreactive mesogenic compounds having a polar terminal group of CN are taught and are also included in disclosed formula (I) (see formula (I) and column 11, lines 16-38). See Example 17.

Claims 1, 3-5, 9, 11-13 and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Sage et al (5,948,486). Sage et al disclose liquid crystal monomers for in-situ polymerization in the presence of a photoinitiator. See compound II in Figure 5 and Example 1, column 7, lines 25-32.

Claims 1-9 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Coates et al (5,989,461). See the examples.

Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Jolliffe et al (6,316,066). See the Abstract, column 13, lines 21-57, and the claims.

Claims 1-9 and 11-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Hassall et al (5,770,107). Hassall et al disclose a reactive liquid crystalline compound of formula I wherein R^1 is a polymerizable group. See column 1, lines 1-47, column 2, line 13, to column 3, line 6, and the Examples.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-9, 11-13, and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Broer et al (4,892,392). See the discussion of the disclosure of Broer et al above. Broer et al teach that the disclosed acrylate monomer can be dissolved and the resulting solution can be provided as a thin film on a substrate (column 3, lines 10-15). It would have been obvious to one skilled in the art at the time of the invention to select toluene as solvent to dissolve the compositions disclosed by Broer et al, in the absence of evidence to the contrary. It is considered to be the ordinary skill of one skilled in the art to select an appropriate solvent for a given composition. One of ordinary skill in the art at the time of the invention would have been motivated to select a solvent in order to provide a thin film on a substrate, as taught by Broer et al.

Claims 1, 3-5, 9, 11-13 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sage et al (5,948,486). See the discussion of the disclosure of Sage et al above. Sage et al teach polymerization of the disclosed monomer in a solvent, specifically 1,2-dichloromethane, in column 12, lines 23-39. It would have been obvious to one skilled in the art at the time of the invention to select toluene or to substitute toluene for 1,2-dichloromethane, as solvent to dissolve the compositions disclosed by Sage et al, in the absence of evidence to the contrary. It is considered to be the ordinary skill of one

skilled in the art to select an appropriate solvent for a given composition. One of ordinary skill in the art at the time of the invention would have been motivated to select a solvent that a selected monomer would dissolve in in order to polymerize the disclosed monomer, as taught by Sage et al.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 13 of U.S. Patent No. 6,379,758. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. Claim 13 sets forth mesogenic compounds of formula I including many of the same species of formula I set forth in the instant claims in combination with an initiator.

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 6,813,822. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. Claim 1-8 of US '822 set forth mesogenic compounds of formula I including species of formula I set forth in the instant claims wherein a fluorophenylene group is included in combination with an initiator.

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 14 of U.S. Patent No. 6,544,605. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. Claim 14 sets forth mesogenic compounds of formula I including many of the same species of formula I set forth in the instant claims in combination with an initiator.

Claims 1-19 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-43 of U.S. Patent No. 6,669,865. Although the conflicting claims are not identical, they are not patentably distinct from each other for the following reasons. Claims 1-43 set forth compositions comprising mesogenic compounds of formula I including many of the same species of formula I set forth in the instant claims in combination with an initiator.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Coates et al (6,207,770), Coates et al (6,007,745), Verrall et al (6,099,758), Verrall et al (6,217,948), and Verrall et al (6,217,955).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan W Berman whose telephone number is 571 272 1067. The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on 571 272 1078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Susan W Berman
Primary Examiner
Art Unit 1711

SB.
2/7/05